CLAIMS:

1. A composition of matter comprising a hydride ion having a binding energy of about 0.65 eV.

2. A method for the explosive release of energy comprising reacting a hydride ion having a binding energy of about 0.65 eV, or a compound of said hydride ion, with a proton to produce a molecular hydrogen having a first binding energy of about 8,928 eV.

3. A method of claim 2 wherein the proton is supplied by an acid or a super-acid.

4. A method of claim 3 wherein the acid or super-acid is selected from the group consisting of HF, HCl, H_2SO_4, HNO_3, the reaction product of HF and SbF_5, the reaction product of HCl and Al_2Cl_6, the reaction product of H_2SO_3F and SbF_5, the reaction product of H_2SO_4 and SO_2, and combinations thereof.

5. A method of claim 2 wherein the reaction is initiated by rapid mixing of the hydride ion or hydride ion compound with the acid or super-acid.

6. A method of claim 5 wherein the rapid mixing is achieved by detonation of a conventional explosive proximal to said hydride ion and said acid or super-acid.

7. A method for the explosive release of energy comprising thermally decomposing a compound of a hydride ion, said hydride ion has a binding energy of about 0.65 eV, to producing a hydrogen molecule having a first binding energy of about 8,928 eV.

8. A method of claim 7, wherein the thermal decomposition is achieved by detonating of a conventional explosive proximal to said hydride ion compound.

9. A method of claim 7, wherein the thermal decomposition is achieved by percussion heating of said hydride ion compound.

10. A method of claim 9, wherein percussion heating of the hydride ion compound comprises colliding a projectile tipped with said compound under conditions resulting in detonation upon impact.

11. A fuel comprising a compound including at least one increased binding energy hydrogen species selected from the group consisting of:

an increased binding energy hydride ion having a binding energy greater than 0.8 eV,

an increased binding energy hydrogen atom having a binding energy of about $13.6/n^2$ eV,

an increased binding energy hydrogen molecule having a first binding energy of about $15.5/n^2$ eV, and

an increased binding energy molecular hydrogen ion having a first binding energy of about $16.4/n^2$ eV,

wherein n is a fraction whose numerator is 1 and denominator is an integer greater than 1.

12. A method for providing a hydride ion having a binding energy of about 0.65 eV comprising:

supplying an atomic hydrogen having a binding energy of about $13.6/n^2$ eV, where n is a fraction whose numerator is 1 and denominator is an integer greater than 1;

reacting said atomic hydrogen with a first reductant, thereby forming at least one stable hydride ion having a binding energy greater than 0.8 eV and at least one non-reactive hydrogen atom;

collecting the non-reactive hydrogen atom;

reacting the non-reactive hydrogen atom with a second reductant thereby forming stable hydride ions including said hydride ion having a binding energy of about 0.65 eV.

13. A method of claim 12 wherein said first reductant has a high the work function or a positive free energy of reaction.

14. A method of claim 13 wherein said first reductant is a metal other than an alkali or alkaline earth metal.

15. A method of claim 14 wherein said first reductant is tungsten.

16. A method of any of claims 13 to 15 wherein said second reductant comprises a plasma or an alkali or alkaline earth metal.

Add a1